What is SARE?

Since 1988, the Sustainable Agriculture Research & Education (SARE) program has been the go-to USDA grants and outreach program for farmers, ranchers, researchers and educators who want to develop innovations that improve farm profitability, protect water and land, and revitalize communities. To date, SARE has awarded over $354 million to more than 8,043 initiatives.

SARE is grassroots with far-reaching impact

Four regional councils of expert practitioners set priorities and make grants in every state and island protectorate.

SARE communicates results

SARE shares project results by requiring grantees to conduct outreach and grower engagement; and by maintaining an online library of practical publications, grantee-produced information products and other educational materials.

SARE: Advancing the Frontier of Sustainable Agriculture in...

South Carolina

Project Highlight: Fruit Bagging Reduce Reliances on Pesticides

When Clemson University fruit specialist Juan Carlos Melgar suggested putting a paper bag over a peach to detract insects and diseases during production, farmers laughed. But when his SARE-funded trials showed that the technique protects the fruit from devastating brown rot, marauding insects like plum curculio and even hungry birds, producers and backyard growers started paying attention.

Researchers found that bagging peaches between petal fall and harvest reduces pesticide use while increasing yields and maintaining flavor. Even though it involves more labor, Melgar estimated that bagging can increase revenue by $95 per tree in an organic system when the fruit is sold directly to consumers. “We’ve gotten a lot of positive responses from farmers all over the country as a result of the research study,” said Melgar.

Fruit bagging for protection is a common strategy in Asia. With South Carolina ranked second in the nation behind California in peach production at 77,000 tons, researchers at Clemson felt that applying the technique to orchards was a worthwhile endeavor because peach growers in the southeastern U.S. face very high pest and disease pressures. Melgar is taking this research to a regional level with a newly acquired $1 million USDA-NIFA grant, applying the technique to more orchards in South Carolina, Georgia and Florida.

For more information on this project, see sare.org/projects, and search for project number OS16-094.

SARE in South Carolina

southern.sare.org/sare-in-your-state/south-carolina

$4,524,645 in total funding

73 grant projects

(since 1988)

For a complete list of grant projects state by state, go to www.sare.org/state-summaries
SARE Grants in South Carolina

Total awards: 73 grants

- 19 Research and Education
- 6 Sustainable Community Innovation
- 12 Professional Development Program
- 20 Farmer/Rancher
- 6 Graduate Student
- 10 On Farm Research/Partnership

Total funding: $4,524,645

- $3,361,066 Research and Education
- $43,620 Sustainable Community Innovation
- $720,833 Professional Development Program
- $182,885 Farmer/Rancher
- $73,864 Graduate Student
- $142,377 On Farm Research/Partnership

Find a complete list of projects on page 3.

SARE's Impact

53 percent of producers report using a new production technique after reading a SARE publication.

79 percent of producers said they improved soil quality through their SARE project.

64 percent of producers said their SARE project helped them achieve higher sales.

Learn about local impacts at: southern.sare.org/sare-in-your-state/south-carolina

Contact Your SARE State Coordinator

SARE sustainable ag coordinators run state-level educational programs for Extension and other ag professionals, and many help grant applicants and recipients with planning and outreach. Visit southern.sare.org/state-pages/south-carolina to learn more.

Joshua Idassi
South Carolina State University
(803) 878-9038
jidassi@scsu.edu

Matt Smith
Clemson University
(843) 519-0464
mcs5@clemson.edu

For detailed information on SARE projects, go to www.SARE.org

SARE is funded by the USDA’s National Institute of Food and Agriculture (NIFA).

This report includes summaries of competitive grant programs only. Some competitive grant programs that are no longer offered may be included or excluded from the totals in this report depending on the grant program and SARE region.
South Carolina has been awarded $4,524,645 grants to support 69 projects, including but not limited to, 15 research and/or education projects, 12 professional development projects and 20 producer-led projects. South Carolina has also received additional SARE support through multi-state projects.

**RESEARCH AND EDUCATION GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| LS22-374  | Cover crop inter-seeding in organic corn production to reduce resource inputs and soil disturbance and enhance pest control and farm profitability | $371,000     | Dr.Sruthi Narayanan  
Clemson University  
Dr.Carmen Blubaugh  
University of Georgia  
Dr.Joshua Idassi  
South Carolina State University  
Dr.Dave Lamie  
Clemson University  
Dr.Meghnaa Tallapragada  
Temple University  
Dr.Rongzhong Ye  
Clemson University |
| LS22-369  | Establishing an Organic Watermelon Industry in South Carolina                                         | $370,000     | Matthew Cutulle  
Clemson University, CREC  
Dr.Bhupinder Farmaha  
Clemson University  
Dr.Shaker Kousik  
USDA-ARS- United States Vegetable Lab  
Dr.Amnon Levi  
USDA-ARS-United States Vegetable Lab  
Brian Ward |
| LS22-387  | Wholesale Market Success For Limited Resource Gullah Farmers                                        | $49,500      | Walter Mack  
Gullah Farmers Cooperative Association                                                              |
| LS22-366  | Development of Sustainable Strategies for Managing Bacterial Diseases and Improving Tree Health in the Peach Production System | $371,000     | Hehe Wang  
Clemson University  
Juan Carlos Melgar  
Clemson University  
Guido Schnabel  
Clemson University  
Dr.Michael Vassalos  
Clemson University  
Dr.Rongzhong Ye  
Clemson University |
| LS21-355  | Gullah/Geechee Agro-Culture: Sustaining Culture to Sustain Agriculture in the Lowcountry            | $341,346     | Dr.Najmah Thomas  
University of South Carolina Beaufort                                                                   |
| LS21-359  | Strengthening Farmer-consumer Connections for Sustainable Agricultural Systems                      | $213,954     | Courtney Quinn  
Furman University  
Dr.Karen Allen  
Furman University  
Dr.John Quinn  
Furman University |
| LS19-306  | Utility of Anaerobic Soil Disinfestation and Organic Herbicides for Weed and Disease Management in Organic Solanaceous Vegetable Systems | $293,470     | Matthew Cutulle  
Clemson University, CREC |
<table>
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<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS19-305</td>
<td>Incorporating Natural, Non-toxic Arthropod Resistant Tomato Varieties into Southern Production Systems</td>
<td>$299,963</td>
<td>Juang-Horng Chong, Clemson University</td>
</tr>
<tr>
<td>LS16-273</td>
<td>Improving Silvopasture Systems in the South: Identification of Suitable Forage Crops and Enhancement of Environmental Quality in Upland Forests</td>
<td>$135,487</td>
<td>Dr. John Quinn, Furman University</td>
</tr>
<tr>
<td>LS09-217</td>
<td>Improvement of the safety of food handling practices on small farms</td>
<td>$200,000</td>
<td>Dr. Paul Dawson, Clemson University</td>
</tr>
<tr>
<td>LS06-188</td>
<td>Expanding the grazing season for sustainable year-round forage-finished beef production</td>
<td>$163,000</td>
<td>Susan Duckett, Clemson University</td>
</tr>
<tr>
<td>LS04-213</td>
<td>Development and Integration of Sustainable Agriculture Core Curriculum Training into the Southern Region Extension Education System</td>
<td>$241,000</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
<tr>
<td>LS03-157</td>
<td>Suppression of weeds and other pests in fresh market vegetables using wild radish cover crop</td>
<td>$173,125</td>
<td>Jason Norsworthy, Clemson University</td>
</tr>
<tr>
<td>LS03-155</td>
<td>Creating a value chain system for local and regional farm products</td>
<td>$19,310</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
<tr>
<td>LS93-054</td>
<td>Evaluation of Low-Input, No-Till, No-Herbicide Continuous Grazing System for Dairy Cows</td>
<td>$118,911</td>
<td>Jean Bertrand, Clemson University</td>
</tr>
</tbody>
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### PROFESSIONAL DEVELOPMENT PROGRAM GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPDP22-15</td>
<td>Training Educators in the Southern Region Using Aquaponics as a Sustainable Agriculture Solution</td>
<td>$71,980</td>
<td>Dr. Lance Beecher, Clemson University, Ben Calhoun, Greenwood Area SBDC, Roland McReynolds, Carolina Farm Stewardship Association</td>
</tr>
<tr>
<td>SPDP21-01</td>
<td>Train the Trainers: Reducing impacts from harmful algal blooms in livestock water sources in South Carolina</td>
<td>$79,750</td>
<td>Dr. Debabrata Sahoo, Clemson University, Dr. Matthew Burns, Clemson University, Mark Nettles, South Carolina State University, 1890 Research and Extension, Heather Nix, Clemson University Cooperative Extension, Dr. Michael Vassalos, Clemson University, Sarah White, Clemson University</td>
</tr>
<tr>
<td>ES19-150</td>
<td>Advanced Soil Health Training for South Carolina Agriculture Professionals</td>
<td>$79,847</td>
<td>Kelly Flynn, Clemson University</td>
</tr>
<tr>
<td>ES17-137</td>
<td>Wholesale Success: Building the capacity of farmers to meet demand for locally and sustainably grown produce</td>
<td>$78,008</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
<tr>
<td>ES13-117</td>
<td>Training in Renewable Energy Systems for Small Farms to Reduce Energy Costs and Improve Profitability</td>
<td>$78,128</td>
<td>Dr. Geoff Zehnder, Clemson University</td>
</tr>
</tbody>
</table>
### Pollinator Conservation Short Course

**Project #:** ES11-108  
**Title:** Pollinator Conservation Short Course  
**SARE Support:** $92,066  
**Project Leaders:** Eric Mader  
**Affiliation:** The Xerces Society

### On-Farm Training in Organic Pest Management Practices for Small, Diversified Farms

**Project #:** ES10-106  
**Title:** On-Farm Training in Organic Pest Management Practices for Small, Diversified Farms  
**SARE Support:** $83,775  
**Project Leaders:** Dr. Geoff Zehnder  
**Affiliation:** Clemson University

### Calhoun Fields Laboratory: A Program for Experiential Training in Organic Farming Systems

**Project #:** ES02-064  
**Title:** Calhoun Fields Laboratory: A Program for Experiential Training in Organic Farming Systems  
**SARE Support:** $49,926  
**Project Leaders:** Dr. Geoff Zehnder  
**Affiliation:** Clemson University

### South Carolina Farm and Forest Land Conservation Training

**Project #:** ES01-057  
**Title:** South Carolina Farm and Forest Land Conservation Training  
**SARE Support:** $25,428  
**Project Leaders:** Ben Boozer  
**Affiliation:** Clemson Institute for Economic & Community Development

### Overcoming Training Obstacles: A Realistic Cost-Effective Approach

**Project #:** ES97-017  
**Title:** Overcoming Training Obstacles: A Realistic Cost-Effective Approach  
**SARE Support:** $10,000  
**Project Leaders:** Charles Q. Artis  
**Affiliation:** South Carolina State University, Community and Economic Development

### The First Requirement of Agriculture Sustainability: Efficient Management of Available Resources

**Project #:** ES97-018  
**Title:** The First Requirement of Agriculture Sustainability: Efficient Management of Available Resources  
**SARE Support:** $60,000  
**Project Leaders:** Charles Q. Artis  
**Affiliation:** South Carolina State University, Community and Economic Development

### Extending Sustainable Agriculture Concepts and Practices to Traditional Agricultural Advisors

**Project #:** LST94-006  
**Title:** Extending Sustainable Agriculture Concepts and Practices to Traditional Agricultural Advisors  
**SARE Support:** $11,700  
**Project Leaders:** Jim Palmer  
**Affiliation:** Clemson

### Farmer/Rancher Grants

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| FS22-341   | Does reduction of nitrate inputs in pasture land treated with Chlorella vulgaris result in cost savings and healthier soil and grass? | $10,975      | Dale Snyder  
Sweetgrass Garden Co-op |
| FS21-330   | Does Treatment with Chlorella vulgaris Extend the Life of Tomato Plants to Increase Tomato Sales? | $14,640      | Dale Snyder  
Sweetgrass Garden Co-op |
| FS20-326   | Summer Cover Crops for Organic No-till Broccoli                               | $14,820      | Sarah Belk  
Wild Hope Farm |
| FS18-309   | Studying the Use of Copper to Raise Healthier Goats                           | $10,000      | Judy Langley  
Windy Hill Farm |
| FS17-300   | Scaling Indigo Production in South Carolina                                   | $5,965       | Kathy McCullough  
Farmer |
| FS16-288   | Modified Method for Roller-Crimper No Till System in the Southeast Coastal Plain | $8,327       | Mary Connor  
Three Sisters Farm |
| FS14-284   | Is freshwater fish compost as effective as saltwater fish compost on vegetable production? | $10,000      | Dale Snyder  
Sweetgrass Garden Co-op |
| FS13-276   | Shade cloth for fall bearing blackberry druplet abortion/malfunction problems in southeastern USA | $6,458       | Walker Miller  
The Happy Berry Bunch |
| FS11-255   | Cucumber Pollination with Bumblebees                                          | $8,530       | David MacFawn  
Rawl Farms |
| FS11-257   | Is Fish Waste Compost worth the Mess and Effort?                              | $9,848       | Dale Snyder  
Sweetgrass Garden Co-op |
<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS10-247</td>
<td>Using Buckwheat to Attract Beneficial Insects for Crop Protection</td>
<td>$9,037</td>
<td>Daniel Parson Parson Produce</td>
</tr>
<tr>
<td>FS10-245</td>
<td>Forage Chicory Use in Rotational Grazing of Sheep to Reduce Intestinal Worms, Reduce Grain Supplementation, And Maximize Growth</td>
<td>$9,078</td>
<td>Kathy McCaskill Old McCaskill's Farm</td>
</tr>
<tr>
<td>FS09-233</td>
<td>Dual Season Organic Asparagus Production</td>
<td>$9,995</td>
<td>Mary Connor Three Sisters Farm</td>
</tr>
<tr>
<td>FS04-184</td>
<td>Edamame Variety Trials for the Local Fresh Market</td>
<td>$4,777</td>
<td>Carolyn A. Prince</td>
</tr>
<tr>
<td>FS99-102</td>
<td>Cattle Lane Construction Alternatives That Enhance Intensive Grazing Systems</td>
<td>$9,850</td>
<td>Tom Trantham Trantham's Dairy Farm</td>
</tr>
<tr>
<td>FS98-070</td>
<td>Red Plastic Mulch as an Alternative to Insecticides in Production of Seedless Watermelons</td>
<td>$7,390</td>
<td>John Frazier</td>
</tr>
<tr>
<td>FS98-079</td>
<td>Demonstration of a Low-Input Diversified Small Farm Operation</td>
<td>$9,200</td>
<td>Theodore Nesmith</td>
</tr>
<tr>
<td>FS95-033</td>
<td>Cover Crops in Integrated Vegetable Production Systems</td>
<td>$9,285</td>
<td>Charles Wingard W.P. Rawl &amp; Sons Farms</td>
</tr>
<tr>
<td>FS94-005</td>
<td>Vegetable Marketing Strategies for a Small Farm Co-op</td>
<td>$10,000</td>
<td>Curtis Inabinett Sea Island Farmers Co-op</td>
</tr>
<tr>
<td>FS94-016</td>
<td>Clover Cover Crops, Weed Management and Consumer Tolerance to Insect Damage</td>
<td>$4,710</td>
<td>Horace &amp; Shaw Skipper The Berry Patch</td>
</tr>
</tbody>
</table>

**GRADUATE STUDENT GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS18-192</td>
<td>Cover Cropping to Improve Soil Moisture Content for the Following Cash Crop</td>
<td>$16,496</td>
<td>Dr.Sruthi Narayanan Clemson University Ricardo St. Aime Clemson University</td>
</tr>
<tr>
<td>GS17-174</td>
<td>Optimizing Nutritional Management in Fruit Tree Production in Southern U.S.</td>
<td>$16,441</td>
<td>Juan Carlos Melgar Clemson University Qi Zhou Clemson University</td>
</tr>
<tr>
<td>GS13-126</td>
<td>Weeds, Nitrogen, and Yield: Measuring the Effectiveness of an Organic No-Till System</td>
<td>$10,927</td>
<td>Dr.Geoff Zehnder Clemson University David Robb Clemson University</td>
</tr>
<tr>
<td>GS04-041</td>
<td>Preliminary Investigation for Application of Supercritical Fluid Extraction Technology for Garlic Oil Extraction</td>
<td>$10,000</td>
<td>Dr.Terry Walker Clemson University Meidui Dong Clemson University</td>
</tr>
<tr>
<td>GS04-034</td>
<td>Control of Soilborne Fungi with Biofumigation</td>
<td>$10,000</td>
<td>Anthony Keinath Clemson University Samuel Njoroge Clemson University</td>
</tr>
<tr>
<td>GS03-020</td>
<td>The Assessment of Conservation and Traditional Tillage Systems on Weed Dynamics, Insect Abundance, and Northern Bobwhite Quail Life and Behavioral Patterns</td>
<td>$10,000</td>
<td>William Bowerman Clemson University Derek Eggert Clemson University</td>
</tr>
</tbody>
</table>
### ON FARM RESEARCH/PARTNERSHIP GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS20-133</td>
<td>The Potential of Inter-seeded Cover Crops for Enhancing Soil Health and Soil Moisture Content in a Row Crop Production System</td>
<td>$20,000</td>
<td>Dr. Sruthi Narayanan Clemson University</td>
</tr>
<tr>
<td>OS18-118</td>
<td>Cover Cropping to Increase the Sustainability of Cropping Systems by Developing Soil Organic Matter, Improving Soil Health, and Suppressing Weed Growth</td>
<td>$15,000</td>
<td>Dr. Sruthi Narayanan Clemson University</td>
</tr>
<tr>
<td>OS17-109</td>
<td>Identification of Factors Involved in Peach Skin Streaking</td>
<td>$15,000</td>
<td>Guido Schnabel Clemson University</td>
</tr>
<tr>
<td>OS16-100</td>
<td>Getting to the Bottom of ‘Bronzing’, A Peach Skin Disorder Causing Severe Losses for Organic and Conventional Peach Growers</td>
<td>$15,000</td>
<td>Guido Schnabel Clemson University</td>
</tr>
<tr>
<td>OS16-096</td>
<td>Cover Crop Influence on Stored Soil Water Availability to Subsequent Crops</td>
<td>$14,995</td>
<td>Dr. Sruthi Narayanan Clemson University</td>
</tr>
<tr>
<td>OS16-094</td>
<td>Fruit Bagging as a Strategy to Reduce Reliance on Pesticides for the Production of Peaches in the Southeast</td>
<td>$14,967</td>
<td>Juan Carlos Melgar Clemson University</td>
</tr>
<tr>
<td>OS16-093</td>
<td>Increasing Sustainability of Peanut, Cotton, and Soybean Production Systems Through Innovative Interseeding Technology to Enhance Farm Profit and Reduce Pest Occurrence</td>
<td>$14,990</td>
<td>Daniel Anco Clemson University</td>
</tr>
<tr>
<td>OS07-035</td>
<td>On-Farm Use of a Hybrid Vetch Cover Crop to Reduce Fusarium Wilt in Seedless Watermelon</td>
<td>$9,900</td>
<td>Anthony Keinath Clemson University</td>
</tr>
<tr>
<td>OS03-010</td>
<td>Poultry Litter Research Project</td>
<td>$12,600</td>
<td>David Gunter Clemson Extension Service</td>
</tr>
<tr>
<td>OS03-013</td>
<td>Growing Organic Fruits and Vegetables for Local Farmer’s Markets</td>
<td>$9,925</td>
<td>York Glover</td>
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</tbody>
</table>

### SUSTAINABLE COMMUNITY INNOVATION GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS12-087</td>
<td>Fighting Obesity in Schools By Changing Eating Habits of Students</td>
<td>$10,000</td>
<td>Robert Behr Ashley Ridge High School</td>
</tr>
<tr>
<td>CS10-078</td>
<td>GrowFood Carolina</td>
<td>$10,000</td>
<td>Lisa Turansky South Carolina Coastal Conservation League</td>
</tr>
<tr>
<td>CS08-065</td>
<td>Marshview Community Organic Farms – Young Farmers of the Lowcountry</td>
<td>$9,700</td>
<td>Sara Reynolds Marshview Community Organic Farm</td>
</tr>
<tr>
<td>CS08-064</td>
<td>Growing the Manning Farmer’s Market</td>
<td>$5,050</td>
<td>Rebecca Rhodes City of Manning</td>
</tr>
<tr>
<td>CS07-059</td>
<td>Chicora Farmers Market</td>
<td>$6,300</td>
<td>Amanda Crump Metanoia CDC</td>
</tr>
</tbody>
</table>
Total funding from the USDA SARE program to
South Carolina
$4,524,645

For further information on projects, contact 770-412-4787 or ssare@uga.edu.
Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National
Institute of Food and Agriculture (NIFA).